STATE OF SOUTH CAROLINA)
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Application of Duke Energy Carolinas, LLC for Approval of EE Vintage 3 Revenue Requirement)
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BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

COVER SHEET

DOCKET NUMBER: 2011 - 420 - E

(Please type or print)

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DOCKETING INFORMATION (Check all that apply)

☐ **Emergency Relief demanded in petition** ☐ **Request for item to be placed on Commission's Agenda expeditiously**

☐ **Other:**

INDUSTRY (Check one)

- ☒ Electric
- ☐ Electric/Gas
- ☐ Electric/Telecommunications
- ☐ Electric/Water
- ☐ Electric/Water/Telecom.
- ☐ Electric/Water/Sewer
- ☐ Gas
- ☐ Railroad
- ☐ Sewer
- ☐ Telecommunications
- ☐ Transportation
- ☐ Water
- ☐ Water/Sewer
- ☐ Administrative Matter
- ☐ Other:

NATURE OF ACTION (Check all that apply)

- ☐ Affidavit
- ☐ Agreement
- ☐ Answer
- ☐ Appellate Review
- ☐ Application
- ☐ Brief
- ☐ Certificate
- ☒ Comments
- ☐ Complaint
- ☐ Consent Order
- ☐ Discovery
- ☐ Exhibit
- ☐ Expedited Consideration
- ☐ Interconnection Agreement
- ☐ Interconnection Amendment
- ☐ Late-Filed Exhibit
- ☒ Letter
- ☐ Memorandum
- ☐ Motion
- ☐ Objection
- ☐ Petition
- ☐ Petition for Reconsideration
- ☐ Petition for Rulemaking
- ☐ Petition for Rule to Show Cause
- ☐ Petition to Intervene
- ☐ Petition to Intervene Out of Time
- ☐ Prefiled Testimony
- ☐ Promotion
- ☐ Proposed Order
- ☐ Protest
- ☐ Publisher's Affidavit
- ☐ Report
- ☐ Request
- ☐ Request for Certification
- ☐ Request for Investigation
- ☐ Resale Agreement
- ☐ Resale Amendment
- ☐ Reservation Letter
- ☐ Response
- ☐ Response to Discovery
- ☐ Return to Petition
- ☐ Stipulation
- ☐ Subpoena
- ☐ Tariff
- ☐ Other:

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November 17, 2011

Jocelyn Boyd, Esquire
Chief Clerk/Administrator
Public Service Commission of South Carolina
101 Executive Center Drive, Suite 100
Columbia, South Carolina 29210

Re: Application of Duke Energy Carolinas, LLC for Approval of EE Vintage 3 Revenue Requirement, Docket No. 2011-420-E

Dear Ms. Boyd:

Southern Alliance for Clean Energy and the South Carolina Coastal Conservation League (collectively, "Petitioners"), through counsel, respectfully submit the following comments and recommendations concerning Duke Energy Carolinas, LLC's ("Duke" or "the Company") Application for Approval of EE Vintage 3 Revenue Requirement ("Application"), which Duke filed on October 11, 2011.[1]

Petitioners have reviewed the Company's application and generally support Duke's EE Vintage 3 revenue requirement of approximately $35.4 million.[2] Duke's programs are performing well and the Company seems to be succeeding in delivering cost-effective energy efficiency resources to its customers. However, Petitioners have concerns relating to Duke's evaluation, measurement and verification ("EM&V") process, including the need for clear timelines for filing robust EM&V reports with the Commission and for applying EM&V results to energy savings estimates, and an energy savings true-up for Vintage 0 and Vintage 1.

For the reasons that follow, Petitioners generally support Duke's application but recommend that the Company (i) ramp up efforts on energy efficiency in the non-residential sector, (ii) provide a schedule or timeline for completing future EM&V reports so it is clear when vintages will be verified and finalized, and file the reports with the

[1] As indicated in their petition to intervene, dated November 10, 2011, Petitioners are presenting their position in this docket in the form of written comments to be filed by November 17, 2011. These comments were prepared with the assistance of Natalie Mims, Energy Policy Manager at Southern Alliance for Clean Energy.

[2] Application at 3. Petitioners have not performed a thorough investigation of all costs in the filing, but find that most program costs and savings seem reasonable. The only program that appears to be uncharacteristically expensive is the Low Income program, which projects to save 466 MWh in year one and cost over $1M.

Commission upon completion; (iii) and provide a clear timeline for applying EM&V results to energy savings estimates for each program in the mid-term and final true-ups.

I. Duke's EE programs appear to be performing well and achieving substantial energy savings.

Petitioners have reviewed Duke's Application in this docket and it appears that DEC ramped up program implementation from Vintage 0 to Vintage 1, as shown in Table 1. While non-residential performance increased much less than did the residential savings from Vintage 0 to Vintage 1, there are many opportunities for DEC to enhance its non-residential offerings and bring the total energy savings as a percentage of sales to at least 1%.

Table 1. Duke Energy South Carolina Vintage 0 and Vintage 1 Energy Savings

	Vintage 0	Vintage 1
Residential (GWh)	40	489
Non Residential (GWh)	27	68
Total (GWh)	67	588
EE as percentage of retail sales (%)	0.09%	0.74%

Duke estimates that, in Vintage 1, its residential programs achieved approximately 489 GWh of annual energy savings "at the plant" (including line loss), which reflects avoided generation.[3] Using the South Carolina allocation factor of 27%, the residential savings for South Carolina in Vintage 1 were approximately 133 GWh. Based on residential sales of 7100 GWh, the savings represent 1.86% of sales.[4]

Duke estimates that, in Vintage 1, its non-residential programs achieved about 19 GWh of annual energy savings "at the plant."[5] Using the South Carolina allocation factor of 27%, the non-residential energy savings for South Carolina in 2010 were

[3] Data is from Exhibit 2 of Application. Based on conversations with Duke Energy, energy efficiency reported is at the generator. The lost revenues calculations use energy efficiency savings from the meter, although they are not reported in this filing.
[4] Exhibit 5 of Application.
[5] Exhibit 2 of Application.

approximately 19 GWh. Based on non-residential sales of 14,000 GWh, the estimated non-residential program savings represents about 0.13% of non-residential participants sales.[6]

II. Duke should encourage increased participation from non-residential customers through robust program offerings.

In both North and South Carolina, industrial customers can choose to opt out of utility sponsored energy efficiency programs, and not bear the costs of new programs, if they implement their own energy efficiency programs. Opt-out provisions do not exempt industrial customers from engaging in energy efficiency efforts altogether. Instead, they allow industrial customers to opt out of utility programs only if they implement their own programs.

Industrial and large commercial sectors represent a large resource opportunity: likely more than half of the cost-effective efficiency potential. Failure to utilize this resource opportunity increases system costs for all classes of customers. As shown in Table 2, approximately 33% of the retail non-residential load in South Carolina opted out of Vintage 1. Duke has used these opt-out numbers to project the opt-out numbers in Vintage 3.

Table 2. South Carolina Non-Residential Sales and Opt Out

	Sales GWh	EE Opt-out GWh	Opt out as percentage of sales
South Carolina Retail Non-Residential	14,650	4,905	33%

Many of Duke's peer utilities in the Southeast save much more energy with their non-residential customers than with their residential customers because it is often easier to save more energy with fewer customers in the non-residential sector. One example of this is in Florida, where Gulf Power has exceeded its commercial program goals -- achieving 179 percent of its goal in 2009 and 145 percent in 2010, with overall saving of 0.14% of its non-residential energy sales in 2010.

We strongly urge the Company to explore ways to encourage customers who have opted out to participate in their energy efficiency program. High-quality non-residential programs result in high participation. For example, in 2001, Focus on Energy, a nonprofit that was created to work with Wisconsin residents and businesses to install cost-effective energy efficiency and renewable energy projects, began offering efficiency solutions to all Wisconsin industrial customers. Wisconsin FOE estimates that more than

[6] Exhibit 5 of Application.

90% of large industrial energy users have participated in multiple programs, and many customers have participated in 20 projects or more. The impact of these quality offerings is that few, if any, customers opt out of the program. Nestle USA has participated in multiple efficiency projects focusing on food processing facilities, and has saved approximately $200,000 in energy costs at just one of its facilities.[7] Phillips Plastic, an injection molding company, has saved approximately $31,000 in annual energy cost savings due to a recent chiller project.[8]

III. Evaluation, Measurement & Verification is critical to ensure cost-effective energy efficiency and the process must be transparent.

EM&V is a critical step in ensuring that energy efficiency programs are cost-effectively saving the utility and ratepayers money. Petitioners strongly support the implementation of cost-effective energy efficiency programs and believe that programs that are not achieving energy efficiency savings as planned must be re-evaluated for opportunities to modify program design, increase participation, and/or reduce cost.

In this filing, Duke Energy has clearly indicated how evaluation, measurement and verification will be implemented. Petitioners appreciate this clarity and are pleased that Duke Energy intends to apply EM&V in the same way in North and South Carolina.[9] The approach that Duke put forward in this application, as in North Carolina, is fair to ratepayers while not placing undue burden on the Company. The Company will true-up energy efficiency program energy savings from Vintage 1 retrospectively, as no M&V was completed prior to the close of Vintage 1 (end of calendar year 2010), and then will apply future EM&V prospectively.[10]

Like Duke's Vintage 0 application, this application does not have any EM&V applied to it because there was no EM&V completed during Vintage 0 or Vintage 1. We understand that the Company anticipates that it will file true ups, and apply EM&V to those filings, in its Rider 4 application in 2012. We also understand that Duke anticipates filing all applicable EM&V reports with the South Carolina Commission in its Rider 4 application in 2012.

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[7] For more information on the efficiency projects implemented by Nestle USA in Wisconsin, *see* Appendix 1.

[8] For more information on the efficiency projects implemented by Phillips Plastics in Wisconsin, *see* Appendix 1.

[9] In North Carolina, SACE, Duke and the North Carolina Public Staff reached an agreement concerning the application of EM&V results to the Company's EE programs, which was approved by the North Carolina Utilities Commission earlier this month. *See* Order Approving DSM/EE Rider and Requiring filing of Proposed Customer Notice, NCUC E-7 Sub 979 (Nov. 8, 2011) at 16-17. The agreement provides that EM&V results will be applied retrospectively to the beginning of the program offering, and for vintage true ups, the initial EM&V results will be considered actual results for a program unit the next EM&V results are received, with the exception of the Non-Residential Smart$aver Custom Program and the Low Income EE and Weatherization Assistance Program.

[10] Application at 9.

While this is an acceptable approach, Petitioners encourage Duke to clarify the process for sharing EM&V results with the Commission upon report completion. Filing EM&V documentation upon the completion of the studies would resolve documentation issues in advance of future annual EE/DSM rider proceedings, thereby fostering robust program evaluation and encouraging program improvement while still allowing for timely cost recovery.

Petitioners are pleased that Duke Energy included a general timeline for future EM&V in this filing. However, all that has been provided is a schedule showing when future EM&V will be completed. In addition to specifying in which quarter the EM&V will be completed, Duke should provide a clear timeline – both past and future – for *applying* EM&V results to program energy savings estimates for the true-up, including the start, end and effective dates of the EM&V reports. This timeline should be provided in an aggregated table instead of spread across 50 pages of program descriptions, as it is in this filing in Appendix C.

IV. Process improvements for filing

In Progress Energy's recent energy efficiency cost recovery docket,[11] we noted the difficulty of participating in a docket in a timely manner without a clear timeline. In response, the Commission issued an order that provided a timeline for intervenor participation in the docket in future proceedings.[12] Petitioners greatly appreciated the Commission clarifying the timeline and would respectfully ask that the Commissioners would consider providing a timeline for intervenor participation in future Duke cost-recovery proceedings.

V. Conclusion & Recommendations

In conclusion, Duke appears to be on the right track to capturing increasing amounts of energy efficiency savings, and providing ratepayers with low cost, reliable, energy resources. Petitioners commend Duke for its program performance and generally support its Application in this docket. Based on the issues raised herein, Petitioners recommend that Duke take the following actions: i) increase efforts on energy efficiency in the non-residential sector, (ii) provide a schedule or timeline for completing future EM&V reports so it is clear when vintages will be verified and finalized, and file the reports with the Commission upon completion; (iii) and provide a clear timeline for applying EM&V results to energy savings estimates for each program in the mid-term and final true-ups.

Petitioners look forward to continuing to work with Duke to ensure that the Company's programs succeed in saving energy and money for South Carolinians.

[11] Progress Energy Carolinas DSM/EE Cost Recovery Rider Application, Docket No. 2011-181-E.
[12] Stipulation in Commission Order No. 2011-619, Docket 2011-181-E.

Respectfully submitted, this 17th day of November, 2011.

s/ J. Blanding Holman, IV
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Attorney for Petitioners

STATE OF SOUTH CAROLINA

BEFORE THE PUBLIC SERVICE COMMISSION

DOCKET NO. 2011-420-E

In the Matter of: Application of Duke Energy Carolinas, LLC for Approval of EE Vintage 3 Revenue Requirement	)	COMMENT LETTER

I certify that the following persons have been served with one (1) copy of Petitioners' Comments on the Application of Duke Energy Carolinas, LLC for Approval of EE Vintage 3 Revenue Requirement via electronic mail and U.S. First Class Mail at the addresses set forth below:

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s/ J. Blanding Holman, IV
J. Blanding Holman IV
On behalf of Petitioners

This 17th Day of November, 2011

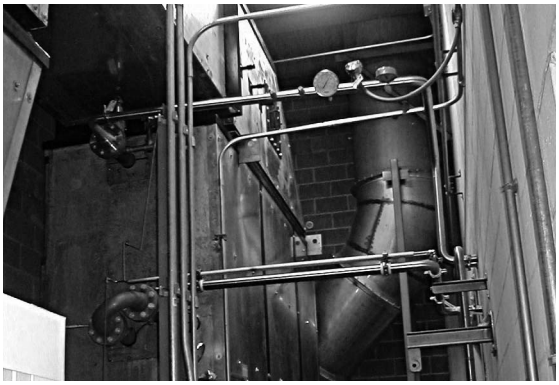
Attachment

BUSINESS PROGRAMS

Nestlé USA saves energy with new condensing-economizer system

CASE STUDY

With today's high energy costs, it's no surprise that companies are searching diligently for ways to improve energy efficiency. With a financial incentive from Focus on Energy, Wisconsin's statewide program for energy efficiency and renewable energy, Nestlé USA's infant formula plant in Eau Claire was able to turn what had once been wasted air into daily energy savings of $550 with the installation of a condensing economizer system. The condensing economizer captures the latent heat from water vapor in the flue gas.



New condensing economizer and exhaust stack.

Nestlé USA first began to investigate installing a condensing economizer system in early 2005. These systems transfer a substantial amount of sensible and latent heat from the hot flue gases to the boiler make-up water. In Nestlé USA's case, the energy is used to pre-heat cold boiler water. Rising natural gas prices—which have jumped by nearly 90 percent since 2001—made the equipment a top priority, and a financial incentive from Focus on Energy meant that system payback was less than three years.

Nestlé USA installed a condensing-economizer system on two water-tube boilers. The condensing economizer was chosen because it extracts heat that cannot be recovered by a conventional economizer alone. In addition, the system's fan is controlled by a variable-frequency drive (VFD) to optimize energy efficiency. These controls mean the fan only operates when there's a sufficient level of heat to warrant it. Other systems throttle the flow with a damper instead of slowing down the fan.

Net energy savings for the project were 13,500 million Btus, which equals the natural gas savings less the corresponding increase in electricity used by the economizer fan. All estimated savings were based on a conservative average load of 37 percent and are expected to be higher during the heating season. A Focus on Energy Measurement and Verification (M&V) study conducted in April 2006 showed that actual savings were very close to projections.

THE OPPORTUNITY

Many of Nestlé USA's production processes rely on heated water; water comes out of the main at roughly 50 degrees farenheit and requires a substantial amount of energy to heat.

PROJECT SUMMARY	
Project Cost	$340,000
Therm Savings	141,864
Energy Savings	$110,675
Focus Incentive	$40,386
Energy Payback	2.7 years

Nestlé USA Food Company is headquartered in Vevey, Switzerland and is the world's largest food and beverage company, with 250,000 employees worldwide. The Eau Claire facility is a branch of Nestlé USA, the company's U.S. division. Nestlé USA has worked with Focus on Energy, in partnership with Xcel Energy, since 2002. Efficiency upgrades have been completed at locations throughout Wisconsin including Eau Claire, Hager City, Jefferson, Burlington, and Stoughton. Improvements at the Eau Claire plant alone have saved nearly $200,000 in energy costs, and this facility received the Governor's Award for Excellence in Energy Efficiency in 2006. This award recognizes the company's efforts to reduce dependence on fossil fuels, stimulate the economy, and preserve the environment.

For more information, call **800.762.7077** or visit **focusonenergy.com.**

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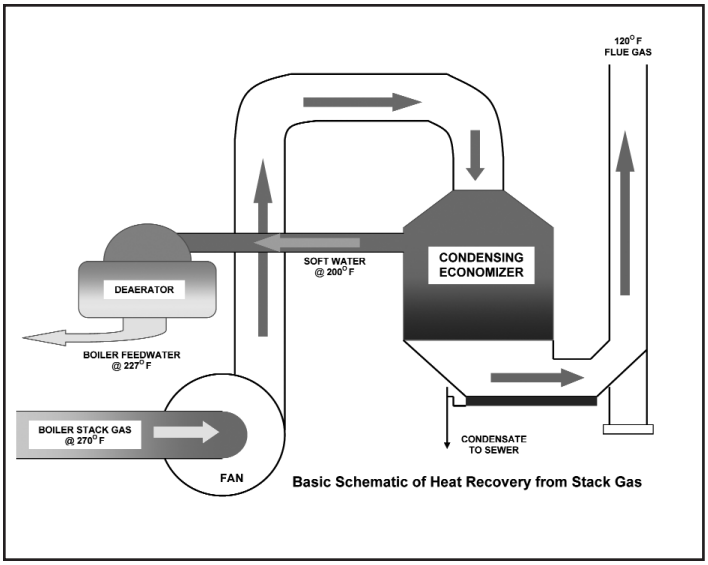

Figure 1: Schematic of a heat flow through condensing economizer system.

The company had considered installing a condensing-economizer system in the past to heat water more efficiently, but relatively low natural gas prices and high equipment costs made the payback period prohibitively long.

THE SOLUTION

Rising natural gas prices meant that it was critical to install more energy-efficient equipment, and the Focus on Energy financial incentive helped tip the purchase decision. Nestlé's new system has a number of energy-optimizing features including a condensing economizer and a VFD-controlled economizer fan. The system draws hot flue gases from the boiler stacks and recycles it to pre-heat boiler make-up water. "Using the exhaust to pre-heat the make-up water can add as much as 120 degrees of heat—and creates substantial energy savings," said Ken Williams, Focus on Energy's business programs director.

PROJECT BENEFITS

"Beyond the huge energy savings, our new condensing economizer system helps our operation run more smoothly with little worry of being able to meet our steam needs," said Larry Willi, facilities engineer at Nestlé USA.

Pre- and post-installation measurements by Focus on Energy showed an annual savings of nearly 142,000 therms, which is offset somewhat by an increase in electricity use of 208,823 kilowatt-hours (kWh) per year to operate the economizer fan. The net energy savings are 13,500 million Btus per year. Post-installation measurements were taken during April 2006; and system savings are expected to be even higher during the heating season.

The estimated cost to develop and install the economizer was $340,000 and the project qualified for a $40,386 Focus on Energy financial incentive. Annual energy savings were estimated at $110,675 based on a blended rate of $0.05 per kWh and $0.80 per therm (which was a two-year cost average at the time). This figure includes the deduction for increased electrical use by the economizer fan.

In addition, the ability to deliver hot water more rapidly to the production process helps to ensure that production flows smoothly. "It's almost like increasing your boiler capacity," said Williams.

"The implementation grant from Focus on Energy, along with the presence and support of its energy advisor, helped us move this project to high priority," said Willi.

HOW CAN FOCUS ON ENERGY HELP YOU?

Looking for ways to improve energy efficiency at your production facility? Focus on Energy can help. Our experienced and knowledgeable industry-specific energy advisors can offer best practice support in a number of areas including project evaluation assistance, measurement, evaluation of savings, financial assistance for stalled projects, training opportunities, tools to manage energy, and third-party reviews. To learn more, call **800.762.7077** or visit **focusonenergy.com**.

Focus on Energy works with eligible Wisconsin residents and businesses to install cost-effective energy efficiency and renewable energy projects. Focus information, resources, and financial incentives help to implement projects that otherwise would not be completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and businesses manage rising energy costs, promote in-state economic development, protect our environment, and control the state's growing demand for electricity and natural gas. For more information, call **800.762.7077** or visit **focusonenergy.com**.

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BUSINESS PROGRAMS

New Chiller Technology Saves Phillips Plastics Time and Money

CASE STUDY

Focus on Energy, a statewide service, works with eligible Wisconsin residents and businesses to install cost-effective energy efficiency and renewable energy projects. We provide technical expertise, training and financial incentives to help implement innovative energy management projects. We place emphasis on helping implement projects that otherwise would not get completed, or to complete projects sooner than scheduled. Our efforts help Wisconsin residents and businesses manage rising energy costs, protect our environment and control the state's growing demand for electricity and natural gas.

To learn more about Focus on Energy,SM call 800.762.7077 or visit focusonenergy.com

Phillips Plastics' Multi-shot facility in Eau Claire requires a steady supply of chilled water to ensure optimum product quality and cycle times. Long known as a forward thinker when it comes to energy efficiency, the facility recently installed an innovative frictionless chiller that delivers nearly three times the water supply of its previous unit, while cutting energy usage by nearly 75 percent.

The new chiller, from McQuay Air Conditioning, uses frictionless technology and is among the first installations of this new technology in the state. The unit has a capacity of 160 tons—vs. the 60-ton capacity of the old chiller—which means that the facility can easily meet both current and expanding production needs.

Pre- and post-installation tests run by Focus on Energy, Wisconsin's energy efficiency and renewable energy program, showed that the new chiller saves 70.8 kW of demand and 611,712 kilowatt hours (kWh) of electricity annually.

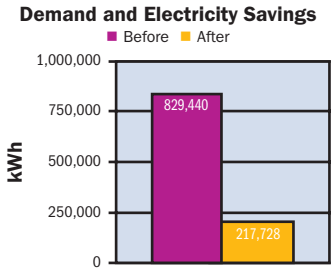
THE OPPORTUNITY

Phillips Plastics was using a 60-ton chiller with an energy rating of 1.13 kW per ton. Running on a 24/7 schedule, the plant was routinely operating at or above that capacity level, and constant demands on the chiller meant it typically provided water at 55° F—a less-than-optimum temperature that was slowing the production cycle.

Frank Rushmann, Facility Manager, and management thought it had two options: increase capacity with the addition of a second chiller (a 25-ton chiller was in storage at another facility) or replace the existing unit with a new, larger-capacity chiller. The used chiller was the least expensive option in the short-run, but had only the same 1.13 kW per ton rating as the existing chiller and didn't add much additional capacity. A new, standard-issue chiller would have an energy rating in the neighborhood of .65 kW per ton—a definite energy savings, but not necessarily enough to cost-justify the capital expenditure.

Frank Rushmann, Phillips Plastics Facility Manager, with new McQuay turbo core chiller with digital operator interface over right shoulder displaying current energy consumption.

PROJECT SUMMARY	
Project Cost	$145,000
Energy Savings	$31,809
Focus Incentive	$15,066
Energy Payback	4 years



THE SOLUTION

Business ally Erv Smith recommended a frictionless chiller that ensured sufficient quantities of chilled water to meet current and future production needs, and saved Phillips Plastics $31,809 in annual energy costs.

"With this new technology there are no bearing surfaces. This means that the compressor can run without oil and that the heat transfer surfaces are much more efficient" said Noel Smith, president of ally Erv Smith Services. "The combination of frictionless technology and the oversized chiller does a number of things: it provides capacity that meets current needs and future ones, and even partially loaded it runs at a phenomenal .31 kW per ton—about 27 percent of the energy of their old chiller."

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Phillips Plastics has been a leader in injection molding services since 1964 and has six plastic injection molding facilities located throughout northern Wisconsin. Its Multi-shot facility in Eau Claire, Wisconsin delivers world-class capabilities in engineering, design, tooling and molding, and specializes in creating thermoplastic components comprised of two or more resins. The Multi-shot facility has partnered with Focus on Energy on numerous occasions since 2002. Other projects include the installation of a VFD air compressor and a cooling tower with variable speed drive, as well as ongoing HVAC-maintenance. To date these projects have saved Phillips 671,775 kWh, or $33,588.

PROJECT BENEFITS

The new chiller reduces Phillips Plastics' annual electricity usage by 611,712 kWh and cuts demand by 70.8 kW.

These energy savings translate to enough energy to do the following annually:

- Power 40 average homes in Wisconsin
- Save the equivalent of 791 barrels of oil
- Remove the equivalent of 65 cars from the road

Other benefits include a decreased risk of downtime created by insufficient cooling capacity, the security of having a new piece of equipment—which also decreases the risk of downtime—and increased product quality, courtesy of a reliable chilled water supply. The new chiller can provide water at 44° F, a temperature which helps to decrease cycle time.

"This situation is an excellent example of the value of having good partners and being a progressive company," said Dean Laube, an Energy Advisor for Focus on Energy. "If your allies know that you're receptive to new ideas, they're more likely to bring them to you instead of just presenting status quo solutions that might not be as effective."

The total cost for the system was $145,000. With an estimated savings of $31,809 in annual energy costs, and a Focus on Energy incentive of $15,066, payback on the installation is just over four years.

The Multi-shot facility is one of over ten manufacturing locations Phillips Plastics has in Wisconsin.

PROJECT TEAM

Phillips Plastics
Project management

Erv Smith
Distribution and installation

McQuay Air Conditioning
Equipment supplier

Focus on Energy
Pre- and post-installation metering, verification of vendor's energy calculations, project grant

Energy efficient McQuay turbo core chiller providing process chilled water for the plastics industry.

How can focus on energy help you?

"We rely on Focus on Energy to be our sounding board for new ideas. They've been an excellent resource when we're trying to determine the best ways to save energy and money. Plus, Focus incentives have often helped us to cost-justify a new, energy-efficient purchase"

Frank Rushmann
Phillips Plastics Multi-shot Facility
Facility Manager

Companies that are looking for ways to improve the efficiency of their manufacturing processes should contact Focus on Energy. Our Energy Advisors can offer in-depth, industry-specific knowledge and deliver a neutral, third-party perspective that can help you to determine the most effective way to solve your energy challenges.

For more information, call 800-762-7077 or visit www.focusonenergy.com.

Focus on Energy is a public-private partnership offering energy information and services to energy utility customers throughout Wisconsin. The goals of this program are to encourage energy efficiency and use of renewable energy, enhance the environment, and ensure the future supply of energy for Wisconsin. **800.762.7077 focusonenergy.com**

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Radiant heater bands cut energy use for plastics processors

As a Wisconsin business, it pays to learn about emerging technologies that can help you save energy. With Focus on Energy, Wisconsin's statewide program for energy efficiency and renewable energy, all the information and resources you need are at your fingertips. Here's how Focus helped two plastic manufacturers in Wisconsin.

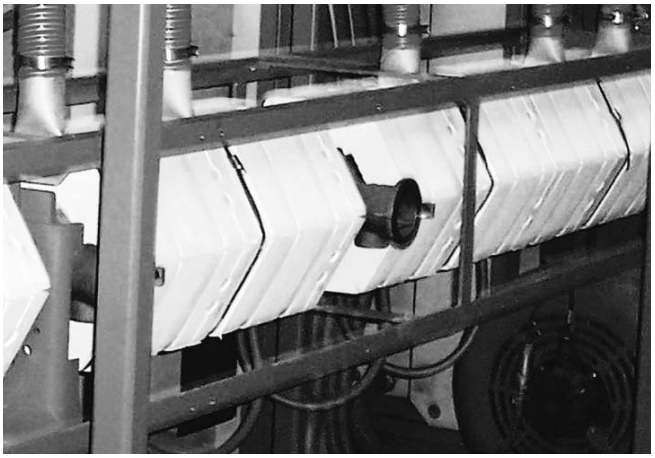
All heater bands are not created equal.
A new radiant heater band design that is easy to install, less labor intensive to maintain, and energy efficient shows promise for the plastics industry. The innovative radiant heater band design addresses traditional barrel heating and cooling inefficiencies. It hastens warm-up times and can make cool-down systems more effective.

PACTIV CORPORATION: SHEET EXTRUSION ENHANCEMENTS

The first of the newly designed radiant heater bands in Wisconsin were installed at Pactiv Corporation (Pactiv) in Chippewa Falls. Pactiv continually seeks process improvement and works with Focus on Energy to identify innovative energy savings opportunities. The thermal control system was an emerging technology Pactiv wanted to try.

"We were skeptical at first that something this simple could have the projected impact. After testing and measuring the results, we hope to install them on the rest of our extruders," said Mike Arrigoni, engineer, Pactiv. "The ease of installation of these heaters is a key benefit for us."

Pactiv cut energy use by 33 percent on a large plastic sheet extrusion machine. With 89,000 kWh hours per year in energy savings plus a Focus on Energy financial incentive, the project paid for itself in 1.7 years.



Energy use was cut by 33 percent thanks to the radiant heater band installation on a large plastic sheet extrusion machine at Pactiv Corporation.

Pactiv Corporation
Founded: 1999
Profile: Pactiv produces plastic products for the U.S. foodservice and food packaging markets. Its Hefty® brand is one of the nation's most widely recognized brands.
Website: pactiv.com

Xten Industries
Founded: 1940
Profile: Xten is based in Kenosha, Wisconsin and develops plastic parts, assembled components, and subassemblies for small- and medium-sized manufacturers.
Website: xtenindustries.com

Radiant heater bands cut energy use for plastics processors

XTEN INDUSTRIES: INJECTION MOLDING ENHANCEMENTS

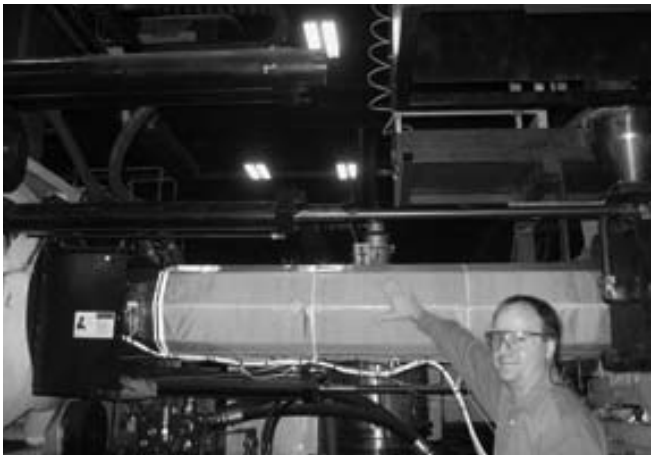
With help from Focus, Xten Industries (Xten) was on a mission to reduce its energy consumption. As such, radiant heater bands were a significant part of the plan. After a 90-day trial, Focus and Xten confirmed the savings matched the supplier's estimates. Xten then went ahead with the project, installing radiant heater bands on more than 20 injection molding machines.

To help fund the project, Xten received a $42,700 Focus incentive. The remainder of the project was financed through Focus' emerging technology shared-savings program. Focus receives 50 percent of the energy savings until the balance is paid off. Xten can purchase the equipment at a declining buyout price at any time.

"For every dollar we save on the heater bands, we keep $0.50 and pay Focus back $0.50," said Mathew Davidson, Xten's president. "That's money directly to our bottom line. It's a direct financing program for manufacturers who can promise to pay it back through the savings they're realizing."

BOTTOM LINE

Newly designed radiant heater bands for plastics equipment reduce energy use, improve temperature control, and are easy to install. Thanks to Focus on Energy, two Wisconsin companies, Pactiv and Xten Industries, are using this emerging technology and saving money and energy.



The installation of radiant heater bands on more than 20 injection molding machines at Xten Industries was made possible thanks to Focus' emerging technology financing solutions.

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With help from Focus on Energy, Wisconsin businesses are saving millions of dollars annually in energy costs. To learn more call Focus at **800.762.7077**, visit **focusonenergy.com**, or email **emergingtech@focusonenergy.com.**

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Hydraulic controls built for ebb and flow

Are your hydraulic-injection molding presses running at full throttle all the time? Not efficient, right? That's why Focus on Energy, Wisconsin's statewide program for energy efficiency and renewable energy, worked with Xten Industries (Xten) to explore the impact of retrofitting the existing pump motors on their hydraulic injection molding presses with variable speed control systems—the results are positive for the plastics industry.

CHALLENGES

Xten, a custom injection molder and contract manufacturer, was near electrical capacity due to company growth. In other words, they were running out of available power. Instead of boosting electrical capacity to the facility, Xten's leadership team gave itself an energy-friendly challenge: reduce the company's energy use.

Xten got to work. The team installed energy-efficient lighting and motion sensors in offices, warehouses, and the production area. Heating and air conditioning improvements were next. However, Xten wanted higher savings. So, the decision was made to improve the efficiency of its core manufacturing processes without compromising product quality.

Xten uses electric and hydraulic injection molding machines to manufacture products. Demand for hydraulic fluid varies greatly during the molding process, yet, pumps ran at top speed all the time in order to meet infrequent maximum demand levels.

ACTIONS

Xten turned to Focus on Energy for objective third-party information to make smart energy decisions about its hydraulic presses. With regard to Xten's budget considerations, Focus selected 13 of Xten's hydraulic presses for energy-efficiency upgrade evaluation.

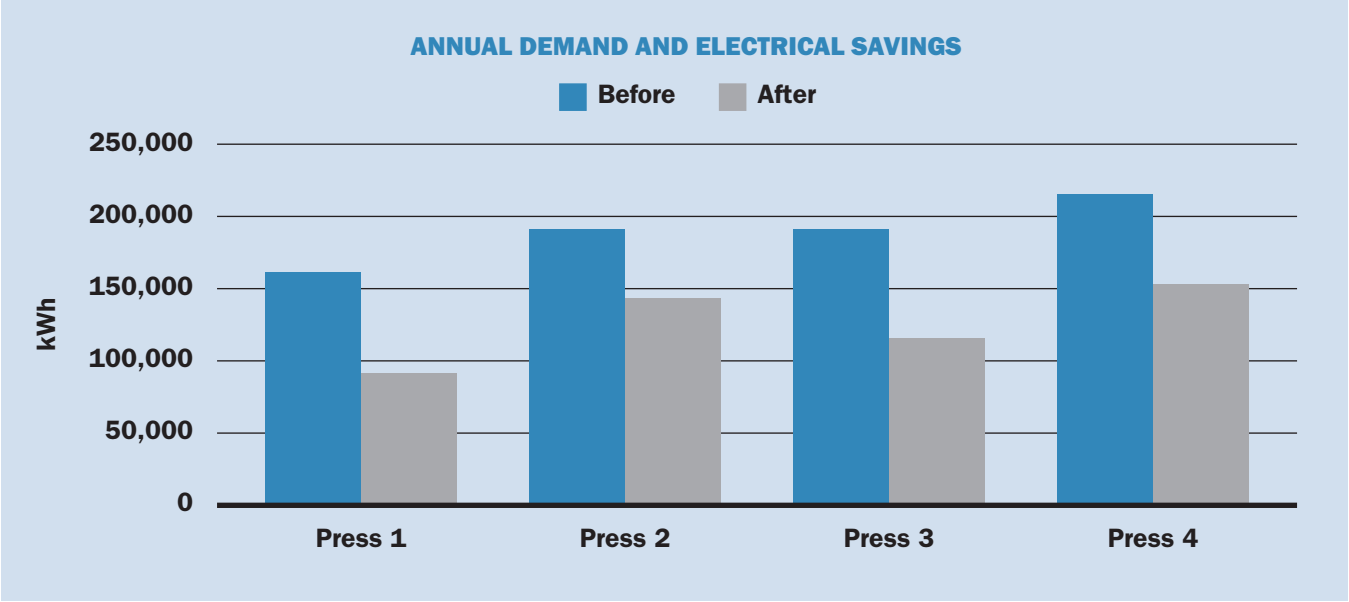
SyncroSpeed, a variable-frequency drive hydraulic control system, next to Xten's largest press.

About Xten Industries
Founded: 1940
Profile: Xten is based in Kenosha, Wisconsin and develops plastic parts, assembled components, and subassemblies for small- and medium-sized manufacturers.
Website: xtenindustries.com

A computer modeling tool helped estimate the energy savings for each press. Based on the model's findings, four presses were identified as the best candidates for variable-frequency drive hydraulic control systems. SyncroSpeed, a variable-frequency drive hydraulic control system, was installed on these four presses.

Instantaneously SyncroSpeed significantly reduced power consumption by automatically delivering the correct volume and pressure of hydraulic fluid needed at each stage of the process, and no more. SyncroSpeed works entirely behind the scenes, requiring no intervention from personnel during operation or set-up changes.

Hydraulic controls built for ebb and flow



RESULTS

The four retrofitted hydraulic presses use 34 percent less energy, saving Xten 220,000 kWh and $24,000 annually in electricity costs. Focus on Energy provided financial assistance in the form of a lease with no up front costs to Xten. Payments are made based on a portion of the energy savings. An additional $27,000 in Focus financial incentives was also provided. Payback on this project was a little over 2.5 years and four additional presses are scheduled for modification.

"In the past, the motors ran flat out all the time," says Mark Dirr, director of engineering at Xten. "Now with the retrofit controls, they only run just enough to get the job done. This saves a lot of electricity."

BOTTOM LINE

Xten significantly reduced its energy use, improved efficiency, and benefited from Focus on Energy's advice and financial assistance.

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Focus on Energy works with eligible Wisconsin residents and businesses to install cost-effective energy efficiency and renewable energy projects. Focus information, resources, and financial incentives help to implement projects that otherwise would not be completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and businesses manage rising energy costs, promote in-state economic development, protect our environment, and control the state's growing demand for electricity and natural gas. For more information, call **800.762.7077** or visit **focusonenergy.com.**

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